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ABSTRACT

Health professions education is a costly and complex aspect of higher education, and its components and functions are different from those of the rest of higher education. This report offers information on the various functions, costs, and funding sources of academic health centers. Because it is difficult for state health policy leaders to determine precise funding requirements, academic health center funding is often by lump sum appropriation with any decrements or increments fairly unrelated to the real work loads and costs. Therefore, policy leaders must understand the functions, costs, and funding involved in academic health centers. These centers are responsible for teaching, research, and service, and costs vary according to their emphasis. Cost and funding are affected by variations in the health professions schools. These variations include sponsorship, size, location, mission, and relationship with parent universities, clinical training sites, and clinical faculty. Points for policy leaders to consider in comparing costs and funding patterns between health professions schools include specific missions, patterns, and procedures of each school. This document includes a one-page account for the academic health centers/medical schools in each of the 15 Southern Regional Education Board states with information on history, location, objectives, sponsorship, and enrollment. (SM)

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COSTS AND FUNDING OF UNIVERSITY HEALTH PROFESSIONS PROGRAMS

Harold L. McPheeters

Southern Regional Education Board
592 Tenth Street NW
Atlanta, Georgia 30318-5790

1987

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GLOSSARY OF TERMS

Academic Health Center: As defined by the Association of Academic Health Centers, a center must (as a minimum) include a school of medicine, a teaching hospital, and at least one additional health education program (structured as a school or college or functioning within other units of the center). In this document the terms center, school, and program may be used interchangeably.

Allied Health Personnel: Health workers other than physicians, dentists, podiatrists, and nurses who complete a specific educational program and who may be credentialed by licensure or certification. The term has no constant or agreed upon detailed meaning; sometimes it is used synonymously with para-medical personnel; sometimes it means all health workers who perform tasks that otherwise would be performed by a physician. Examples are physical therapists, radiation technologists, respiratory therapists, dental hygienists, physicians assistants, and numerous others.

Biomedical Research: Research concerned with human and animal biology, and disease and its prevention, diagnosis, and treatment.

Epidemiological Research: Research that explores the nature, cause, control, and determinants of the frequency and distribution of diseases and disability in human populations.

Faculty Practice Plans: These plans, which involve formal arrangements, are most often found in medical and dental schools where faculty provide various amounts of patient care services that generate revenues. The income from faculty practice plans is earmarked to supplement base faculty salaries and, in some instances, a proportion of these revenues are designated as discretionary funding for deans and/or department heads.

Primary Care: Basic or general health care which emphasizes the point when the patient first seeks assistance from the medical system and the care of the simpler and more common illnesses. The primary care provider usually assumes ongoing responsibility for the patient in both health maintenance and therapy of illness and more recently in the emphasis on health promotion and prevention. Primary care providers are most commonly defined as general or family practitioners, internists, obstetricians, and pediatricians.

Tertiary Care: Health services provided by highly specialized providers, such as neurologists, cardiovascular surgeons as well as coronary care and critical care nurses. Such services frequently require highly sophisticated technological and support facilities and are provided primarily in large hospitals.

Residency/Internship/Fellowship: In the medical education community these terms have several different meanings. The old term internship referred to the first year in a post M.D. training program. Some state statutes still contain the term intern and internship. The most common current term is first-year resident or first postgraduate year in a residency program. A residency is an educational program lasting one or more years. For physicians the period of post graduate education required (in accredited residency programs) to be eligible for certification as a specialist can range from three to seven years. The term fellows in some residency programs refers to all trainees in subspecialty programs. For example, a physician who completes a residency in internal medicine may obtain a fellowship to obtain subspecialty training in any one of the medical subspecialties, such as cardiology, hematology, or others. Residencies are also available for some other health professions, such as dentistry, to provide advanced training.

FOREWORD

For several years health professions education has been the most rapidly expanding part of state appropriations for higher education. The growth in the health sector has been twice that for all other higher education.

State policymakers, board members of state higher education agencies, and state budget officials are aware of these increases, but they have been largely unaware of the multiple programs of education, research and patient care and the complexities of costing and funding for the academic health centers in their states. Simple comparisons of costs and funding between different academic health centers or their component schools are seldom appropriate. This publication provides an overview of the many different missions that may be pursued within academic health centers and the costing and funding implications of each. It also provides a one-page overview of the missions of each of the academic health centers/medical schools in the SREB region, which may be useful to policymakers as they analyze their state's commitment to health professions education.

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INTRODUCTION

Health professions education programs are among the most expensive in all of higher education. Their costs and funding are also among the least well understood, especially by policy leaders outside of the academic health centers themselves. Virtually all of the reports of expenditures for higher education exclude the figures for health professions education because this area is so complex and involves components and functions which differ considerably from those in the rest of higher education. Teaching hospitals, major externally funded research projects, and shared faculty and clinical resources by many different professional schools and levels of undergraduate and graduate programs are not characteristic of most of higher education. In addition there are wide variations in the missions and structures of academic health centers, so that it is difficult to make meaningful comparisons between the costs and funding of different academic health centers using readily available data.

The major fiscal component of most academic health centers is the medical school (its undergraduate and graduate education programs and its research programs). Efforts to determine the expenditures for the medical schools alone have proven frustrating to the Association of American Medical Colleges because of the wide variations in the ways in which different medical schools and their parent universities define and allocate costs. The Association reports as many as tenfold variations in ways in which certain items are recorded. The aggregate figures for all of the nation's 127 medical schools are probably reasonably close to the correct totals, but the wide variations among individual schools make individual comparisons from the composite data virtually meaningless unless one knows about the variations.

This variability has been frustrating for state health policy leaders, such as legislators, executive branch analysts, and higher education agencies. The result has been that the funding for academic health centers has generally been by lump sum appropriation with periodic increments or decrements that are relatively unrelated to actual costs and

work loads. This situation is likely to become a serious problem for academic health centers as competition and cost containment pressures in the health care system reduce funds from other sources and as state budgets become more constrained--a current situation in more than half of the SREB states.

Policy leaders need to have a better knowledge of the functions that go on within the different academic health centers and an understanding of the costs and sources of funding and how these may be reported differently in different schools. Academic health centers are complex organizations, and policy leaders are at a particular disadvantage without a "map" of the major activities, costs, and funding sources of academic health centers. In this publication we have attempted to describe the varied functions, their costs, and the typical sources of funding. We have also tried to describe some of the dimensions on which academic health centers vary (e.g., their missions, governance, size, geographic location, etc.)

We hope this publication will be helpful to policy leaders as they analyze fiscal reports from the academic health centers of their states and perhaps those in nearby states in order to decide which of the functions of their academic health centers are appropriate for financial support from state funds and at what levels.

COSTS AND FUNDING OF TEACHING, RESEARCH, AND SERVICE

Academic health centers are complex organizations with several interrelated missions. The public tends to see academic health centers solely as institutions that prepare physicians to qualify for the M.D. degree and that perform the latest biotechnological feats of diagnosis and treatment. Budget allocations and cost figures often appear to have been constructed on the assumption that the sole mission is undergraduate medical education. In reality, undergraduate education of physicians is but a portion of the total program of an academic health center. Academic health centers are organizational components of universities which include a medical school, a teaching hospital, and at least one other health professions education program. Most academic health centers include several health professions education programs.

The major missions of academic health centers are usually defined as: 1) teaching, 2) research, and 3) service. However, each of these has several components which are given varied emphasis in different academic health centers. The costs associated with these different missions and the funds to support them also vary dramatically.

TEACHING

Teaching is a major responsibility of all academic health centers; it includes several different health professions and levels of education.

Undergraduate Education

Undergraduate education is the preparation of practitioners for the basic practice degree in a profession such as medicine, dentistry, nursing, pharmacy, or one of the allied health specialties. There is a distinction made between those professions that offer a professional degree, such as the M.D. or D.D.S., and those that offer a baccalaureate degree, but they are all referred to as undergraduate education in their respective professions. Virtually all undergraduate students in the health professions are enrolled

full time. The curricula are relatively standardized, typically with a two-year pre-clinical program that consists of lectures and laboratories in the basic medical sciences, such as anatomy, physiology, pharmacology, and pathology, and a two-year clinical portion, which consists primarily of supervised clinical experience with real patients in hospitals or clinics. The pre-clinical portion is taught by full-time professors in the medical sciences in an educational format that is much like that in the rest of higher education.

However, the clinical instruction is provided by a blend of full-time school faculty, graduate students, and part-time or volunteer faculty in small teaching units of six to ten students per instructor. The patterns vary considerably from school to school. Some schools use full-time paid faculties almost entirely; others make considerable use of volunteer practitioners from the communities. Schools that focus on training practitioners for primary care are more likely to use community training sites and community preceptors than those schools that stress hospital-based specialty education and practice.

Costs. The costs of undergraduate education are primarily the costs of faculty and other support staff salaries, but include costs of libraries, instructional aids, laboratories, classrooms, utilities, etc. The actual costs of clinical instruction are difficult to calculate when much of it is provided by volunteer faculty, graduate students, or part-time faculty who may be shared by several different schools. The latter is likely to be the case with faculty persons who teach the basic sciences for the students of several different professional schools.

In addition community-based clinical sites increasingly charge professional schools for "educational costs" to cover some of the extra costs they incur for having students placed with them and using their facilities.

Funding. The funding for undergraduate health professions education comes from the tuitions and fees paid by students, state appropriations, special grants from federal agencies or foundations, and, especially in private universities, gifts and endowments.

In addition some of the funding for clinical faculty persons comes from patient care revenues through faculty practice plans. Faculty practice plans are non-profit corporations that have been set up in most academic health centers to receive the professional fees generated from the services of clinical faculty members. These funds are used for several purposes--supplementing faculty salaries, hiring technicians and support staff who cannot be provided by the school itself, and other special purposes. Practice plans vary greatly in organization and in what they do with their funds. However, they generate a considerable and rising portion of the funding for clinical education in medicine and a small portion in dentistry.

Many students receive scholarships or loans for their undergraduate education. The funds for these scholarships and loans may be provided by the federal or state governments, but although they pass through the accounts of the professional schools, they cannot be considered as basic funding for the educational programs.

Graduate Education in Nursing, Allied Health Professions and Pharmacy

The overwhelming portion of graduate education in the health professions takes place in academic health centers. Graduate education includes the specialty education of physicians, dentists, nurses, etc., and advanced education for careers in research, teaching, and administration.

In many of the professions, such as nursing and the allied health specialties, the basic format for graduate education follows that of the rest of the university. There is likely to be more clinical and seminar type instruction than in other university programs, but the overall pattern of credit hours and degree formats is comparable. The

faculty/student ratios are much higher for graduate education and approach one-to-one for dissertation development at the doctoral level.

Costs. The costs of graduate education in nursing, allied health, pharmacy, and other health professions are primarily faculty salaries related to the higher faculty/student ratios and the higher academic qualifications required for faculty of graduate programs, but there are additional costs related to the extra library resources, computers, etc., that are required for the higher levels of instruction. An element that makes graduate education in these professions a bit more costly is that large portions of the students are enrolled for part-time study. For example, over half of nurses in master's and doctoral level education are part-time students.

Funding. The funding for these programs is typically from tuition paid by students, richer formula funding from state funds, and sometimes special grants from federal agencies or foundations.

Many graduate students in these professions receive federal or state stipends or scholarships to help them with their educational expenses and living expenses. While the funds for such stipends or scholarships may come from state appropriations and be processed through the accounts of the professional schools, they should not be included in the funding of the educational programs themselves.

Graduate Medical and Dental Education

Today virtually all graduates of medical schools and many graduates of dental schools receive graduate education in one of the specialties. The graduate education of physicians for most specialties requires a minimum of three years of residency training; some subspecialties requiring a total of five or seven years of residency or fellowship training. For most dentists and osteopathic physicians the length of graduate education

is usually three years or less, but osteopathic physicians who choose tertiary care specialties must take additional years of residency training. Originally most graduate education in medicine took place in hospitals that had no special affiliation with medical schools, but this has changed. Now, most residency training programs, while still centered in hospital and clinical work, are located in teaching hospitals that are affiliated with medical schools, and clinical supervision and instruction come from clinical faculty persons.

Residency training of physicians has become a complex business because these young practitioners not only receive teaching and supervision in their chosen specialties, but they simultaneously provide medical care for sick patients, and they provide a good part of the clinical supervision for undergraduate medical students and undergraduates in some of the other health professions. During the first year of their graduate education, residents are primarily students, but as they progress to the third and higher years of their residency training, they provide more and more patient care and teaching of other students. Residents are typically paid a stipend or fellowship, the funds for which come largely from patient care revenues although some funding comes from state-supported stipend programs (for example, in family practice or psychiatry), the Veterans Administration, or other sources.

Costs. The costs of graduate education in medicine and dentistry are difficult to document because the responsibilities are split between the teaching hospitals and the professional schools, and there are many variations in the ways in which the costs are reported and analyzed. Major costs are those for the salaries of the supervising clinical faculty persons and their staffs as well as some additional costs in supplies, laboratory services, testing materials, etc., which result from the teaching program. The cost of the residents' salaries is generally considered to be another educational

cost. Some observers have suggested that resident stipends should be broken out to allocate a portion as payment for patient care, a portion as payment for teaching, and a charge for being a student. However, this is not yet being done.

Funding. Currently, the funding for graduate medical education comes mainly from patient care revenues paid to hospitals. The Medicare program for hospitalization of older persons includes a "pass-through" additional fee for "teaching costs," and many other third-party payers also pay higher patient fees to teaching hospitals. However, Medicare is reducing this pass-through, and many third-party payers are urging their payees to choose other hospitals rather than pay the higher charges of teaching hospitals. Consequently, patient fee funding is likely to be reduced.

A characteristic of current funding is that the fee system for the highly technological procedures of the tertiary care specialties, such as surgery, radiology, and pathology, is much higher than that for the primary care specialties of family practice, general medicine, pediatrics, and obstetrics. This means that although the primary care specialists are the ones most needed by society, their specialty training programs are the least well funded by the current system of funding. Many academic health centers stress primary care education, and it is these centers that are likely to have difficulty funding their graduate programs from patient care revenues.

Some funding also comes from state governments or the Veterans Administration as either support for residents' stipends (for example, in family practice) or fellowships for advanced training in the medical subspecialties, or as basic support of faculty costs. A small amount is also available in federal grants for such specialized areas as family practice or geriatrics.

Obviously much of the funding for the clinical faculty who supervise residents in training comes from the patient care revenues generated by the faculty practice

plans, but it is difficult to allocate specific amounts of these funds to resident training because these faculty persons also, and often simultaneously, teach undergraduate students, provide patient care, and conduct research.

Dentistry sometimes charges tuition for graduate students in specialty training, but these charges are relatively modest so the income from this source is small.

Education of Biomedical Specialists

Most academic health centers, especially those with major research programs, provide master's and doctoral level education for biomedical specialists in fields such as physiology, anatomy, biochemistry, and pharmacology. These programs are taught primarily by faculty of the pre-clinical departments, and the educational format follows that of the academic programs in the science fields.

Costs. The costs of these programs, like those in the sciences in general are relatively high because they require the intensive supervision of doctoral level faculty and also laboratories with special facilities and equipment.

Funding. The funding for the faculty supervision of biomedical students comes partly from tuitions and institutional funds and partly from federal or foundation research grants. The same is true of the laboratories and equipment. The funding for the students comes primarily from research grants or fellowships for career research investigators from the National Institutes of Health or other federal agencies. These funds are likely to be passed through the institutions' accounts, although they are actually funds for support of students.

Continuing Health Professions Education

Continuing education is the provision of short-term education programs for practitioners who are already in practice in order to help them keep up with new technologies and to improve their competence in specific areas. Increasingly, continuing education is becoming a responsibility of the health professions schools.

Costs. The costs of continuing medical education are relatively modest and include the fees/salaries for the instructors who teach the courses. Costs also include the expenses for planning, marketing, evaluating, and keeping records for the continuing education offerings.

Funding. The funding for continuing education is largely from the fees paid by registrants who attend the courses. However, these funds usually cover only the instructional and other on-site costs; institutional funds usually cover the costs of planning, marketing, and record-keeping.

RESEARCH

All health professions schools have a responsibility to conduct some research as an integral part of their university's mission. This includes library research and research on the effectiveness of treatment and educational programs. In addition, however, many academic health centers have major biomedical research programs regarding the causes and treatments of illness and the prevention of illness and disability. Much of this research requires special equipment, laboratories, libraries, patient care services, technicians, and supplies--most of which are quite costly. Academic health centers vary in their commitments to this kind of biomedical research. In general, schools whose basic mission is to train primary care practitioners do relatively little major biomedical research and

concentrate their research activities on improving the delivery of care to patients. Other schools, such as public health schools, concentrate on epidemiological research.

Costs. Some research costs are relatively modest, but even modest research studies require computers, statisticians, and libraries. As the research moves into the biomedical area, the costs for researchers, technicians, laboratories, research animals, patient care, and exotic technological devices become very high. In some medical schools the research costs exceed teaching costs, but it is often difficult to separate the two if the researchers are also the teachers, and particularly if they do their research and teaching simultaneously, as sometimes happens in the laboratory or in bedside rounds in the hospitals.

Funding. The funding for the kind of research that is expected of any faculty person usually comes from regular institutional funds. Salaries are calculated with the expectation that faculty persons will do some research as well as teaching.

Major biomedical or epidemiological research studies are almost always funded by grants or contracts from federal agencies, private foundations, or businesses and industries. In some cases states have funded special research centers or programs in the academic health centers (cancer research centers, alcoholism research, etc.). This kind of funding is restricted to those particular research activities, although some of the money may go for fellowships or stipends for graduate students, who may teach in addition to helping with the research.

SERVICE

The services provided by academic health centers and their related professional schools include the care rendered to patients in teaching hospitals and clinics, the public

education rendered through public health and community health programs, and sometimes consultation rendered to local jails, nursing homes, orphanages, etc.

The teaching hospitals and clinics are often expected to provide highly technological care for patients with serious illnesses in specialized units, such as cancer treatment units, burn treatment units, premature newborn nurseries, and shock/trauma units. These units often have very high costs because of the technological nature of the care they provide and the extraordinary staffing of technicians and specialists which they require. Sometimes these specialized services are very liberally reimbursed by health care payment programs, but more often the reimbursement falls short of the costs. The public teaching hospitals also tend to incur high rates of indigent care and uncollectable bad debt.

Many observers have pointed out that a highly technological tertiary care hospital is not the most appropriate site for training primary care practitioners, and this is true. But, professional schools find that it is quite costly to disperse their students to a variety of community health agencies and out-patient clinics, especially when the health care payment system provides much lower reimbursement rates for primary care services than for the high-tech procedures carried out in hospitals.

Costs. The costs of the service functions of academic health centers are extremely high and include the salaries of the professional staff, aides, technicians, and service staff for hospitals and clinics, supplies, equipment, facility construction and maintenance, medications, food, and many other related costs, such as liability insurance and marketing. Clinic and community health programs have somewhat lower costs, but there are fiscal and logistical problems in maintaining teaching and research programs in widely dispersed locations.

Funding. The funding for the service mission of academic health centers comes predominantly from the reimbursement of patient care fees. Most third-party payment programs in the past have reimbursed the higher charges of teaching hospitals, but this is changing in the competitive atmosphere of today's health care system. Business, governments, and the health insurance industry are seeking contracts with less costly hospitals or are steering their employees or policy holders to alternative providers. Thus many teaching hospitals find that they are losing paying patients at the same time that they are gaining more Medicaid and indigent patients. Public teaching hospitals are in particularly difficult positions if their public governance structures prevent them from having access to capital markets for renovations and the up-to-date equipment needed to remain competitive in the private market.

Some funding for teaching hospitals also comes from public funds, such as state appropriations for special treatment units or county taxes. Other funds come from foundations or fund-raising activities by hospital auxiliaries or local civic clubs. Many of these funds are restricted to specific units of the hospitals.

Some teaching hospitals have endowments or receive gifts from individuals or corporations that may or may not be restricted. It is likely that private not-for-profit teaching hospitals will receive more gifts and endowments than public teaching hospitals.

VARIATIONS IN HEALTH PROFESSIONS SCHOOLS THAT INFLUENCE COSTS AND FUNDING

There are many variations in the mission, sponsorship, size, geographic location, etc. that affect costs and funding of health professions schools and academic health centers.

Sponsorship

The sponsorship of health professions schools and their teaching hospitals may be private or public.

Private sponsorship. Private health professions schools have considerable autonomy over their affairs; they also tend to be quite clear about their missions and rather sharply directed to those missions. Some strive to be prestigious research and tertiary care training centers; others are directed to such missions as preparing minority practitioners or preparing practitioners for rural areas. Tuitions tend to be high in private schools, and these schools aggressively seek gifts, endowments, and grants from foundations, industry, and federal agencies. Many also receive some kind of capitation support from state governments.

Private academic health centers are also likely to have prestigious, privately endowed hospitals in which much of their teaching is done, and these hospitals generate large patient fees to offset unfunded care.

Public sponsorship. Public academic health centers are usually state supported (an exception is the Uniformed Health Services University of the Health Sciences). Public schools have varying missions ranging from major research and tertiary care training to primary care training. Since 1965, a number of states have established new medical centers mandated to emphasize the preparation of primary care

practitioners, rather than biomedical research and tertiary care. It has sometimes been difficult to hold to this mission because faculty persons feel that there is more professional prestige and recognition in research and tertiary care. Tuitions in public schools are relatively low, compared to private schools, and the teaching hospitals that are associated with public schools generate less fee income because of the high cost services and large amounts of uncompensated care that they provide for indigent persons or Medicaid patients. While public schools may be quite successful in obtaining federal grants or contracts from private industry, they are less likely to receive endowments and private gifts.

State funding for health professions education has been primarily for undergraduate education or for those graduate programs having academic patterns that follow the rest of the university. In medical and dental education the state funding has usually been made as a lump sum appropriation or sometimes on a capitated, "per student" basis.

For the most part states have intentionally not funded graduate education in medicine and dentistry except through special programs to support primary care training or psychiatric residency training. However, a few states have provided general funding for all graduate education. Sometimes the support has been for basic program costs, and sometimes it has been for resident stipends.

Relationships with Parent Universities

Most health professions schools are part of a parent university, but a few (for example, the Medical College of Georgia) are free-standing institutions. However, academic health centers may be geographically located at some distance from their parent universities so that they must maintain their own campuses, libraries, and administrations. The arrangements under which the costs for these facilities are charged

to the parent universities as part of the overall universities' expenses or allocated specifically to the academic health centers and their individual schools vary from center to center.

Support Services

The same variation is found in the ways in which costs of libraries, instructional centers, laboratories, etc., are allocated to the various schools within the academic health centers. There are examples in which these costs are allocated to the various schools according to their student enrollments and others in which these costs are all assigned to one or another of the schools. In at least one academic health center, the basic science faculty are all allocated to the medical school although they serve other schools.

Fringe Benefits

Another major variation is found in the manner in which fringe benefits of faculty and staff are allocated. Generally, fringe benefits are assigned to the schools along with faculty and staff salaries. However, in some states fringe benefits are allocated to central personnel units that administer fringe benefit programs for all employees of the state system.

Academic Health Centers Versus
Independent Health Professions Programs

The major health professions schools and programs are grouped into academic health centers that include a medical school and at least one other health professions education program and the related teaching hospital(s). Academic health centers are administered by a chief executive officer and staff who serve all of the programs and represent their interests with the parent university. Academic health centers range from those that

contain only two or three different schools to those that include as many as a half dozen different schools. The University of Alabama in Birmingham, for example, has a medical school, dental school, public health school, optometry school, nursing school, school of allied and community health, and a regional technical institute for training allied health technicians.

A few major universities have no medical school, but still have an administrative grouping of health professions programs under a College of Allied Health Sciences. Still other colleges and universities have nursing, allied health, or other health-related programs that are administered by colleges of arts and sciences or other administrative entities. In these cases it is usually difficult to identify specific costs related to the health professions programs except by allocating a portion of the overall institution's costs based on enrollments in the health programs.

Relationships to Teaching Hospitals and Other Clinical Training Sites

Much of the clinical teaching of undergraduate health professions students and the overwhelming portion of the clinical teaching of graduate students takes place in "teaching" hospitals or in teaching clinics and nursing homes in which the staff are prepared to provide appropriate instruction and supervision of students.

The relationships between the major teaching hospitals and the health professions schools vary from direct ownership to negotiated contracts. In many centers the state and/or the university own and operate state teaching hospitals that are the major clinical teaching sites for all the related schools. Private universities may also own and operate their own hospitals. In other places the health professions schools have contractual relationships with local public hospitals (city- or county- or authority-owned hospitals), or with private non-profit or for-profit hospitals. A few health centers have contracts with for-profit hospitals that own or manage their teaching hospitals. The costs and

funding are as variable as the administrative arrangements. Several public hospitals have recently been divested into private, non-profit entities or management has been turned over to for-profit hospital chains for greater flexibility in purchasing and personnel activities and to have access to capital for renovations and expensive new equipment. The long-range cost and funding implications of these arrangements are not yet clear, but they do provide greater fiscal flexibility and efficiency in the short range.

Many academic health centers have teaching relationships with several hospitals. If there is a nearby Veterans Administration Medical Center, there will probably be a Dean's Committee arrangement for some of the clinical teaching to be done there. The Veterans Administration pays some resident stipends and also pays some of the other costs of clinical instruction. An academic health center often includes several specialized hospitals (for example, children's hospitals, psychiatric hospitals) and clinics which may be affiliated with the health professions schools through a variety of functional and fiscal arrangements.

In recent years the health professions schools have been reaching out to a cross-section of community based service programs as clinical training sites, including nursing homes, specialized clinics, senior citizen centers, day care centers, and to independent practitioners who serve as preceptors for students. The administrative and fiscal arrangements for these linkages are extremely variable.

Relationships to Clinical Faculty

Health professions schools vary greatly in their relationships to their clinical faculties.

Some schools employ only full-time clinical instructors who are paid by the schools; this is characteristic of nursing. Other schools have a blend of full-time paid faculty and part-time paid faculty who have commitments to independent practice or other clinical

programs. Many schools use a mix of paid and volunteer faculty who may be independent practitioners or persons employed by other agencies that allow their staff persons to serve as clinical instructors as a part of their regular job responsibilities. There are almost always written agreements or contracts, but the specific arrangements and the flow of money vary widely and make a great difference in the costs and funding of individual schools. The variation in arrangements for clinical faculty is one of the major reasons it has been so difficult to arrive at any meaningful standards for costs of health professions education.

Faculty Practice Plan Arrangements

Faculty practice plans to receive the fees paid to faculty for their patient care services are widely used in medical schools and most dental schools. These private corporations then use their resources to supplement base salaries and for other purposes, such as employing technicians and supporting trainees. Practice plan revenues are substantial in large, tertiary care schools, but much less significant in small schools or those which serve a high proportion of indigent patients. Practice plans generate lower revenues in primary care centers. The variations in practice plans from school to school make comparisons difficult.

Origins of Students

Health professions schools also vary according to the origins of their students. Some private schools recruit primarily upper middle and upper class students whose families can afford the relatively high tuition and fees. Public schools generally attract more students from rural areas and more economically disadvantaged students. State schools also often require that a high proportion of students be in-state residents, and schools that are oriented to minority students attract large numbers of students from those groups. Public and minority oriented schools receive less income from tuition at the same time that

they are more likely to have to provide remediation programs to help some students overcome deficiencies in their preprofessional backgrounds. Until recently the federal government provided some special grants for minority oriented schools, but these are diminishing.

Size of Schools

In health professions education, as in most other endeavors, there are certain economies of scale. Very small schools or programs are likely to have relatively high costs because professional education programs require a certain minimum number of specialized faculty to provide a balanced education and become accredited. Small schools may also be able to provide a more individualized education for students, but this usually results in a higher cost per student.

Large schools and academic health centers that include several different health professions schools can be more efficient in their use of faculty and specialized resources, and they are likely to be more active in competing for research grants. However, large schools also tend to emphasize research and training in the secondary and tertiary care specialties rather than the more needed primary care specialties.

CONSIDERATIONS FOR POLICY LEADERS

With all the many variations in the missions, structures, and operating procedures of health professions schools, it is difficult to make meaningful comparisons of cost and funding patterns between health professions schools, even those which, at first glance, seem to be very similar. Policy leaders at state levels are advised to examine the patterns of individual schools and be sure they understand the specific missions and procedures before comparing cost and funding figures between schools. There are areas in which valid comparisons can be made, but only after one understands the major differences in how schools are structured and operate.

While some of the health professions programs, especially those in nursing and allied health, follow the traditional formats of higher education, medicine, dentistry, and some of the other professional education programs have not followed the usual academic formats of credit hours, contact hours, etc., especially at the graduate levels where degrees are not awarded and where teaching, research, and service are intermingled both in costs and funding.

Formula funding has been applied to those educational programs that follow the historical formats of higher education, but not to the other programs. Organizations such as the Institute of Medicine have attempted to ascertain the actual costs of medical education using accounting methods such as cost construction. These are useful but they use hypothetical assumptions that often result in figures that are somewhat higher than actual expenditures. On the other hand, attempts to compile figures for actual expenditures have yielded drastic variations on specific cost items. A major problem is that administrators have tended to allocate costs to items that can be reimbursed rather than to actual costs.

Efforts have been made to categorize medical schools into such groupings as:

private tertiary care schools

public tertiary care schools

private primary care schools

public primary care schools

special purpose schools

These groupings, however, have been made primarily for theoretical or administrative purposes--not for analysis of costs and funding. The groupings also do not consider other related costs and functions, such as graduate medical education, relationships to academic health centers and parent universities, and relationships to teaching hospitals and other clinical training resources.

Despite these complications in determining actual costs in academic health centers, it should be possible for policy leaders to make sense of cost figures for their own state's health professions programs and to compare them with those of academic health centers in other places, provided they ask the right questions about the figures they obtain from the various sources.

QUESTIONS POLICY LEADERS SHOULD ASK ABOUT COSTS AND FUNDING OF HEALTH PROFESSIONS EDUCATION PROGRAMS

Are the programs under public or private auspices?

There are major differences in funding; tuitions are higher and endowments larger and more numerous in private institutions than in public schools.

What are the missions of the different programs and are they comparable?

The major differences in mission are between centers that aim to produce primary care practitioners and those that stress tertiary care. There are also special missions, such as training minority practitioners and military practitioners.

There are also major differences in the extent to which schools stress biomedical research or specialized patient care programs. These have significant implications for costs and funding.

How are the costs and funding of clinical instruction managed?

The major variations include the use of volunteer or part-time instructors versus the use of full-time paid instructors. However, there are also differences in the extent to which residents or graduate students are used to provide clinical instruction for undergraduate students. There are also differences in whether "instructional costs" are assessed by the clinical facilities and who pays them.

It is also desirable to know something about the practice plans, including what kinds of salary supplements and other items they fund and the overall amounts they fund. This is critical because the salaries furnished by the basic institutional budgets represent only a portion of total salaries, much of which is supplemented by the practice plans.

What are the relative sizes of the various educational programs?

Small programs tend to be relatively costly on a per student basis. However, the presence of several related programs, such as graduate programs, research programs, and programs in related health professions, will allow some sharing of resources and reduction of per student costs.

What are the fiscal relationships between this educational program and the rest of the academic health center and the parent university?

How are the costs allocated to the academic health center and to the individual health professions education programs? These include costs of libraries, learning resource centers, basic science faculty salaries, fringe benefits, and general facility costs.

A major question centers on the fiscal relationships of the major teaching hospitals, which sometimes are budgeted to the academic health centers and sometimes to health departments or other units of government.

What are the geographic differences between programs and what are their implications?

Programs located in large urban areas may have greater access to volunteer faculty persons and a wide range of community-based training sites. Rural programs may have to employ full-time instructors and incur higher costs for transportation of students and faculty to dispersed training sites. On the other hand, urban areas may have to pay higher salaries to attract certain categories of personnel.

What patient care commitments are required of the academic health centers?

Public academic health centers and their teaching hospitals are often expected to provide specialized treatment units (burn treatment, premature newborn baby care, cancer treatment) or to serve large numbers of indigent patients. These incur larger costs, and often result in large amounts of bad debt for both the schools and the hospitals.

ACADEMIC HEALTH CENTERS IN THE SREB STATES*

This section provides a one-page account for each of the medical schools/academic health centers in the 15 SREB states. This information includes a brief description of the history, sponsorship, location, and objectives, and a listing of the major schools and educational programs, with enrollment figures for some of the major programs. The major affiliated hospitals and their approximate bed sizes are also listed.*

The data for these accounts have come from a variety of sources--directories of the Association of Academic Health Centers, the American Hospital Association, and the Association of American Medical Colleges, university catalogs, and reports of educational associations. Some of these sources provide slightly different figures for the same items. Because of this and because there are frequent changes in enrollments, program offerings, and program titles, these accounts should be considered as reasonably close approximations.

It should also be pointed out that several of the universities that are listed have not formally organized their health professions schools and programs into academic health centers with their own executive officers and staff; this fact is noted.

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*Source of hospital bed capacity for teaching hospitals: AHA Guide, American Hospital Association Guide to the Health Care Field, 1986.

ALABAMA

University of Alabama at Birmingham

The Academic Health Center at the University of Alabama, created in 1945, is one of the largest and most complex academic health centers in the nation. It is a major teaching and research center with a wide range of specialty programs. It is located in downtown Birmingham and makes up the major portion of the University of Alabama at Birmingham. Clinical campuses are located in Tuscaloosa and Huntsville.

It also has a Regional Technical Institute for the training of allied health workers across the state of Alabama.

Schools and Programs:

Medicine	undergraduate students	619
	graduate students	459
	medical sciences	211
Dentistry	undergraduate students	222
	graduate students	59
Nursing	baccalaureate (469 students), master's, and doctoral programs	

Community and Allied Health--Programs in dental hygiene, dental assisting, dental lab technology, cytotechnology, respiratory therapy, medical assistant, medical record administrator, medical technologist, emergency medical technician, nuclear medicine technology, occupational therapy, physical therapy, radiation therapy technology, medical lab technician, physician assistant (surgeon)

Public Health

Optometry

Hospitals: University of Alabama Hospitals (792 beds)
Children's Hospital (160 beds)
Veterans Administration Medical Center (414 beds)

University of South Alabama

The University of South Alabama, created in 1963, added a medical school and other health professions schools in 1969 in order to prepare practitioners for South Alabama. The health programs are located on the main campus in Mobile. It has stressed the education of practitioners for primary care. It is not formally designated as an academic health center.

Schools and Programs:

Medicine	undergraduate students	262
	graduate students	96
	medical sciences	
Nursing	baccalaureate (626 students) and master's programs	

Allied Health--Programs in speech pathology and audiology, cytotechnology, radiologic technology, emergency medical training medical technology, physical therapy, respiratory therapy

Hospitals: University of South Alabama Medical Center (392 beds)

ARKANSAS

University of Arkansas for Medical Sciences

The University of Arkansas for Medical Sciences has a long established medical school which is located on its own relatively new campus in Little Rock. Its purpose is to provide comprehensive education in the health professions, but it has a heavy orientation to serving the needs of the largely rural state of Arkansas. It operates six Area Health Education Centers throughout the state and has many other statewide affiliations.

Schools and Programs:

Medicine	undergraduate students	534
	graduate students	343
	biomedical sciences	25
Nursing	associate, baccalaureate (215 students), and master's programs	
Pharmacy		

Health-Related Professions--Programs in cytotechnology, respiratory therapy, medical technology, radiology technology, surgical technology, dental hygiene

Hospitals:

University Hospital (336 beds)
Arkansas Children's Hospital (188 beds)
Veterans Administration Medical Center (1,105 beds)

FLORIDA

University of Miami

The University of Miami medical school began in 1952. It is in a private university and was created to take advantage of the training needs and resources of the Jackson Memorial Medical Center in Miami. It has attracted a good amount of research funding. It is not formally designated as an academic health center. Its mission is to provide comprehensive education and education and research in specialties.

Schools and Programs:

Medicine	undergraduate students	649
	graduate students	470
	medical Sciences	120
Nursing	baccalaureate (282 students), master's, and doctoral programs	
Cytotechnology		
Physical Therapy		

Hospitals: Jackson Memorial Medical Center (1,185 beds)
Veterans Administration Medical Center (710 beds)
University of Miami Hospitals and Clinics (60 beds)

University of Florida - J. Hillis Miller Health Center

The academic health center at the University of Florida began in 1956. It is located on a portion of the main campus at the University of Florida in Gainesville, Florida. The Jacksonville Health Education Programs is a division of the J. Hillis Miller Center. The Center has a comprehensive education program with a focus on community medicine, but also offers education and research in the specialties.

Schools and Programs:

Medicine	undergraduate students	467
	graduate students	330
	medical sciences	156
Dentistry	undergraduate students	301
	graduate students	20
Nursing	baccalaureate (338 students), master's, and doctoral programs	
Pharmacy	baccalaureate and doctoral programs	

Health-Related Professions--Programs in medical technology, physical therapy, ophthalmic medical assistant, physician assistant (primary care)

Veterinary Medicine

Hospitals: University of Florida's Shands Hospital (464 beds)
Veterans Administration Medical Center (475 beds)

University of South Florida

The academic health center at the University of South Florida is a relatively new health center (1971) in a university which is only 30 years old. It is located on a campus 10 miles northeast of downtown Tampa. The academic health center provides a comprehensive education in the health professions, but also strives to provide graduate education in a variety of specialties.

Schools and Programs:

Medicine	undergraduate students	378
	graduate students	320
	medical sciences	36
Nursing	baccalaureate (218 students) and master's programs	
Public Health		

Hospitals: Tampa General Hospital (588 beds)
Veterans Administration Medical Center (697 beds)

GEORGIA

Emory University

Emory University's academic health center is a major, private, health research and training center located on the main campus of Emory University in east Atlanta. Some of the facilities are in downtown Atlanta. It provides comprehensive education in the health professions, but also has major research and training programs in the specialties.

Schools and Programs:

Medicine	undergraduate students	444
	graduate students	623
	medical sciences	154
Dentistry	undergraduate students	209
	graduate students	37
	(School is phasing out undergraduate program and by 1989 will offer only graduate and research program)	
Nursing	baccalaureate (121 students) and master's programs	

Allied Health: Programs in respiratory therapy, ophthalmic medical assistant, radiographing, physical therapy, physician assistant (primary care), nuclear medicine technology

Hospitals:

Emory University Hospital (588 beds)
Crawford W. Long Memorial Hospital (1,482 beds)
Grady Memorial Hospital (918 beds)
Veterans Administration Medical Center (473 beds)
Henrietta Egleston Hospital for Children (165 beds)

Medical College of Georgia

The Medical College of Georgia with its academic health center is a separate institution of the University System of Georgia. The Center is located on its own campus in Augusta, Georgia. It has several affiliations across the state of Georgia. Its objective is to provide comprehensive education for practitioners for Georgia as well as education and research in specialties.

Schools and Programs:

Medicine	undergraduate students	727
	graduate students	342
	medical sciences	18
Dentistry	undergraduate students	207
	graduate students	34
Nursing	baccalaureate (304 students), master's, and doctoral programs	

Allied Health--Programs in associated dental sciences, medical technology, occupational therapy, physical therapy, medical illustration, medical record administration, radiologic technicians, respiratory therapy, physician assistant (primary care)

Hospitals:

Medical College of Georgia Hospital and Clinics (500 beds)
Veterans Administration Medical Center (1,057 beds)
University Hospital (708 beds)

Morehouse School of Medicine

Morehouse School of Medicine is a new, private school of medicine (1978), which is located on the campus of Morehouse College, a prominent, historically black college located in Atlanta. A major objective of the School of Medicine is to provide a comprehensive education for practitioners, with an emphasis on minority students and service to minority communities.

Schools and Programs:

Medicine	undergraduate students	138
	graduate students	15
	medical sciences	18

Hospitals: Grady Memorial Hospital (918 beds)
Hughes Spalding Medical Center (83 beds)
Southwest Community Hospital (114 beds)

Mercer University

Mercer University Medical School began in 1982. It is located on the main campus of private Mercer University in Macon. Its objective is to provide comprehensive education of practitioners for rural Georgia.

Schools and Programs:

Medicine	**undergraduate students**	**95**
	graduate students	**44**

Hospitals: Medical Center of Central Georgia (494 beds)
Dooley Medical Center

KENTUCKY

University of Kentucky

The academic health center at the University of Kentucky was established on the campus of the University of Kentucky in Lexington in 1960. It provides a comprehensive education in the health professions and a range of research and training activities in the various specialties. It has several affiliations throughout the state.

Schools and Programs:

Medicine	undergraduate students	375
	graduate students	321
	medical sciences	100
Dentistry	undergraduate students	172
	graduate students	24
Nursing	baccalaureate (466 students), master's, and doctoral programs	

Allied Health--Programs in community health (health administration), medical technology, physical therapy, physician assistant, radiological health science

Pharmacy	baccalaureate and doctoral programs

Hospitals: University of Kentucky Hospital (461 beds)
Veterans Administration Medical Center (904 beds)
University Ambulatory Care

University of Louisville

The academic health center at the University of Louisville began with the medical school in 1833 as part of what was a private municipal university. The entire university became part of the Kentucky system of higher education in 1970. The academic health center is located on a separate campus in downtown Louisville. The mission is to provide a comprehensive education in the health professions and specialty training and research.

Schools and Programs:

Medicine	undergraduate students	508
	graduate students	375
	medical sciences	78
Dentistry	undergraduate students	237
	graduate students	20
Nursing	baccalaureate (272 students) and master's programs	

Allied Health--Programs in cytotechnology, respiratory therapy, medical technology, nuclear medicine technology, radiologic technology, dental hygiene

Hospitals:

Humana Hospital-University (404 beds)
Veterans Administration Medical Center (363 beds)
Norton Kosair Children's Hospitals, Inc. (519 beds)

LOUISIANA

Louisiana State University Medical Center in New Orleans

The academic health center of Louisiana State University (LSU) in New Orleans was the major, public research and training center for Louisiana for many years. It began in 1931 and remains a major center for research, training and service in New Orleans. The health campus is located adjacent to Charity Hospital. The main campus of LSU is in Baton Rouge. The LSU Medical Center has overall program supervision of the programs at Shreveport as well.

Schools and Programs:

Medicine	**undergraduate students**	**701**
	graduate students	**313**
	medical sciences	**89**
Dentistry	**undergraduate students**	**229**
	graduate students	**41**
Nursing	**associate (72 students),**	
	baccalaureate (350 students),	
	master's, and doctoral programs	

Allied Health--Programs in cardiopulmonary science, communication disorders, medical technology, occupational therapy, physical therapy and rehabilitation counseling, cytotechnology, dental hygiene, dental laboratory technology

Hospitals:

Charity Hospital of Louisiana at New Orleans (940 beds)
Veterans Administration Medical Center (456 beds)
Children's Hospital (122 beds)

Louisiana State University in Shreveport

The medical school and the health professions programs at Louisiana State University in Shreveport began in 1969. The University provides primarily comprehensive professional education, but also offers some training and research in the specialties.

Schools and Programs:

Medicine	undergraduate students	397
	graduate students	271
	medical sciences	33

Radiology Technology

Hospitals: Louisiana State University Hospital-Shreveport (650 beds)
Veterans Administration Medical Center (377 beds)

Tulane University

The medical center at Tulane University dates back to 1834 when it was established as the Medical School of Louisiana. It became private Tulane University in 1884. It is located in a downtown campus next to Charity Hospital of New Orleans. The Center offers comprehensive education in the health professions as well as training and research in the specialties.

Schools and Programs:

Medicine	undergraduate students	606
	graduate students	418
	medical sciences	47
Public Health		

Hospitals:

Tulane University Hospital and Clinic (289 beds)
Charity Hospital of Louisiana at New Orleans (940 beds)
Touro Infirmary (432 beds)
Veterans Administration Medical Center (456 beds)

MARYLAND

University of Maryland at Baltimore

The University of Maryland School of Medicine dates back to 1807. The University of Maryland at Baltimore campus is located on 31 acres of land in downtown Baltimore. Its objectives are to provide a comprehensive education in the health professions and extensive research and education in the specialties. It has many affiliations in Maryland, including three Area Health Education Centers.

Schools and Programs:

Medicine	undergraduate students	630
	graduate students	385
	medical sciences	127
Dentistry	undergraduate students	431
	graduate students	51
Nursing	baccalaureate (676 students), master's, and doctoral programs	
Pharmacy		

Allied Health--Programs in medical technology, physical therapy, dental hygiene

Hospitals:

- University of Maryland Medical System (735 beds)
- Maryland General Hospital (275 beds)
- Maryland Institute for Emergency Medical Systems
- Mercy Hospital (348 beds)
- Veterans Administration Medical Center (271 beds)
- South Baltimore General Hospital (378 beds)

Johns Hopkins University

The Johns Hopkins University is a long established (1876) private university in Baltimore. The health professions schools are located apart from the main campus of the university on a site next to the Johns Hopkins Hospital in East Baltimore. They are not formally organized into an academic health center. The objectives are to provide comprehensive education for health practitioners and high quality research and training in the specialties.

Schools and Programs:

Medicine	undergraduate students	483
	graduate students	511
	medical sciences	290
Hygiene and Public Health		
Nursing	baccalaureate program (62 students)	

Hospitals:

Johns Hopkins Hospital (916 beds)
Veterans Administration Medical Center (271 beds)
Sinai Hospital of Baltimore (534 beds)

MISSISSIPPI

University of Mississippi

The Medical Center of the University of Mississippi was authorized in 1950 and began operation a few years later. It is located on a 155 acre tract in the heart of Jackson. The main campus is in Oxford. Its objectives are to provide comprehensive education for health practitioners and a range of research and training in the specialties in order to meet the manpower needs for the state of Mississippi.

Schools and Programs:

Medicine	**undergraduate students**	**483**
	graduate students	**300**
	medical sciences	**122**
Dentistry	**undergraduate students**	**140**
	graduate students	**6**
Nursing	**baccalaureate (224 students) and master's programs**	

Allied Health--Programs in cytotechnology, dental hygiene, medical record administration, medical technology, nurse anesthesiology, physical therapy, respiratory therapy, emergency medical technology, radiology technology

Hospitals:

University Hospital (499 beds)
Veterans Administration Medical Center (417 beds)
Mississippi Methodist Hospital and Rehabilitation Center (104 beds)

NORTH CAROLINA

Duke University

The Duke University Medical Center began with the endowment of the medical and nursing schools in 1930. It has become one of the major private medical research and training programs in the region. It is located on a site contiguous with the main campus of Duke University in Durham. Its objectives are to provide major research and training in the health specialties as well as comprehensive education for practitioners.

Schools and Programs:

Medicine	undergraduate students	473
	graduate students	559
	medical sciences	310
Nursing	baccalaureate and master's programs	
Physical Therapy		

Hospitals:

Duke Hospital (959 beds)
Veterans Administration Medical Center (439 beds)
Durham County General Hospital (481 beds)

East Carolina University

The academic health center at East Carolina University is relatively new (1972). The center is located in Greenville, adjacent to the Pitt County Memorial Hospital. While the objective is to provide comprehensive education for health care practitioners, there is also a focus on training for primary care practice.

Schools and Programs:

Medicine	undergraduate students	271
	graduate students	117
	medical sciences	32
Nursing	baccalaureate (585 students) and master's programs	

Allied Health--Programs in medical record administration, medical technology, occupational therapy, physical therapy

Hospital: Pitt County Memorial Hospital (560 beds)

University of North Carolina at Chapel Hill

The academic health center at the University of North Carolina at Chapel Hill is the long-established public, health professions education center in North Carolina (1879). It is located on the main campus. Its mission includes major research and education in the specialties as well as comprehensive basic education in the health professions. The center has many linkages to institutions and agencies throughout the state, including an extensive Area Health Education Centers program.

Schools and Programs:

Medicine	undergraduate students	639
	graduate students	389
	medical sciences	352
Dentistry	undergraduate students	302
	graduate students	60
Nursing	baccalaureate (305 students) and master's programs	
Public Health		
Pharmacy	baccalaureate program	

Allied Health--Programs in physical therapy, radiologic science, medical technology, dental hygiene, cytotechnology, occupational therapy

Hospitals:

North Carolina Memorial Hospital (576 beds)
Charlotte Memorial Hospital & Medical Center (777 beds)
Dorothea Dix Hospital (682 beds)
New Hanover Memorial Hospital (420 beds)

Bowman Gray School of Medicine of Wake Forest University

The school of medicine of Wake Forest College, a private university, began in 1902. The Bowman Gray School of Medicine is located in Winston-Salem, four miles from the main campus of the University. The Center has as its mission to provide comprehensive education for health practitioners as well as specialty education and research.

Schools and Programs:

Medicine	**undergraduate students**	**430**
	graduate students	**320**
	medical sciences	**108**

Allied Health--Programs in medical technology, physician assistant (primary care)

Hospitals: **North Carolina Baptist Hospital (642 beds)**
Forsyth Memorial Hospital (695 beds)

OKLAHOMA

University of Oklahoma Health Sciences Center

The Health Sciences Center of the University of Oklahoma has expanded greatly in the past 20 years. It is located on a new campus in Oklahoma City, 20 miles from the main campus of the university in Norman. It is the major public educational center for health practitioners in Oklahoma. It also conducts research and advanced education in a variety of specialties. It has many relationships with agencies across Oklahoma. The Center is also responsible for the medical education program in Tulsa.

Schools and Program:

Medicine	**undergraduate students**	**660**
	graduate students	**433**
	medical sciences	**72**
Dentistry	**undergraduate students**	**256**
	graduate students	**3**
Nursing	**baccalaureate (286 students) and master's programs**	

Allied Health--Programs in cytotechnology, medical technology, nuclear medicine technology, occupational therapy, radiation therapy technology, radiology technology, medical sonography, dental hygiene, physical therapy, physician assistant

Pharmacy

Public Health

Hospitals:

Oklahoma Teaching Hospitals (710 beds)
Veterans Administration Medical Center (423 beds)
Tulsa Division
Hillcrest Medical Center (515 beds)
Saint Francis Hospital (701 beds)
St. Johns Medical Center (618 beds)

Oral Roberts University

The Oral Roberts University School of Medicine is located on the main campus of the university in Tulsa. It accepted its first students in 1978. It is a private school which is developing a basic education for medical practitioners and also specialty programs of education and research.

Schools and Programs:

Medicine	**undergraduate students**	**188**
	graduate students	**54**
Dentistry	**undergraduate students (program is being phased out)**	**18**

Hospitals: City of Faith Medical and Research Center (156 beds)
St. John Medical Center (618 beds)
Children's Medical Center (101 beds)

SOUTH CAROLINA

Medical University of South Carolina

The Medical University is the long-established, public, health professions education program in South Carolina (1824). It is located in Charleston. Its mission is to provide comprehensive education for practitioners and specialty training and research for the state. It includes the South Carolina Consortium of Teaching Hospitals with three Area Health Education Centers.

Schools and Programs:

Medicine	**undergraduate students**	621
	graduate students	640
	medical sciences	86
Dentistry	**undergraduate students**	194
	graduate students	13
Nursing	**baccalaureate (310 students) and master's programs**	

Allied Health--Programs in cytotechnology, dental hygiene, perfusion technology, medical records administration, medical technology, occupational therapy, physical therapy, radiologic technology, respiratory therapy, blood bank technology, nurse anesthesia, orthotic/ophthalmic technology

Pharmacy	**baccalaureate and doctoral programs**

Hospitals:

Medical University Hospital (440 beds)
Charleston Memorial (County) Hospital (153 beds)
Veterans Administration Medical Center (295 beds)

University of South Carolina

The medical school at the University of South Carolina was established in 1973. There had been programs in nursing, pharmacy, and public health for several years previous. These programs have not been formally structured into an academic health center. The facilities are located in Columbia. The objectives are to provide comprehensive education for practitioners and some specialty education and research.

Schools and Programs:

Medicine	undergraduate students	235
	graduate students	163
	medical sciences	20
Nursing	baccalaureate (669 students) and master's programs	
Pharmacy	baccalaureate and doctoral programs (400 students)	
Public Health	master's programs (80 students)	

Public and Allied Health--Programs in speech pathology and audiology, health education

Hospitals:

Richland Memorial Hospital (605 beds)
Veterans Administration Medical Center (460 beds)
William S. Hall Psychiatric Institute (106 beds)

TENNESSEE

East Tennessee State University

The health professions education programs at East Tennessee State University in Johnson City are all relatively new in this public institution, which grew to university stature in 1963 to serve the eastern mountain section of Tennessee. The health professions schools have the mission to provide comprehensive education with an emphasis on primary care practitioners for rural Tennessee. There is no formally organized academic health center.

Schools and Programs:

Medicine	undergraduate students	220
	graduate students	108
	medical sciences	18
Nursing	associate (122 students) and baccalaureate (442 students) programs	

Public and Allied Health--Programs in speech and hearing, dental education and medical/dental assistant, medical lab technology

Hospitals:

Johnson City Medical Center Hospital (365 beds)
Veterans Administration Medical Center (454 beds)
Bristol Memorial Hospital (325 beds)

Meharry Medical College

Meharry Medical College, located in north Nashville, is a private institution, now 100 years old. It is a historically black institution which has a strong commitment to the comprehensive education of minority students (primarily black persons) and to improving the health status of black communities. It offers some specialty education and research as well as comprehensive basic education.

Schools and Programs:

Medicine	undergraduate students	306
	graduate students	87
	medical sciences	39
Dentistry	undergraduate students	184
	graduate students	6

Allied Health--Programs in medical technology, medical record administration, dental hygiene

Hospitals:

George W. Hubbard Hospital of Meharry Medical College (240 beds)
Veterans Administration Medical Center-Murfreesboro (613 beds)
Middle Tennessee Mental Health Institute (429 beds)

University of Tennessee, Memphis

The University of Tennessee is the long established public center for the education of health professionals in Tennessee. It is located in Memphis, far from the main campus of the University of Tennessee in Knoxville. For several years it was called the University of Tennessee Center for the Health Sciences. It is committed to comprehensive education for health practitioners and research and graduate education in the specialties. It has many affiliations.

Schools and Programs:

Medicine	undergraduate students	706
	graduate students	598
	medical sciences	59
Dentistry	undergraduate students	366
	graduate students	26
Nursing	baccalaureate (184 students) and master's programs	

Allied Health--Programs in cytotechnology, blood bank technology, dental hygiene, medical record administration, medical technology, physical therapy, health administration

Pharmacy

Hospitals:

Memphis
- University of Tennessee Medical Center (126 beds)
- Baptist Memorial Hospital (1,700 beds)
- Methodist Hospital (841 beds)
- Veterans Administration Medical Center (880 beds)
- Lebonheur Children's Hospital (156 beds)
- Memphis Mental Health Institute (181 beds)
- Regional Medical Center (422 beds)
- St. Francis Hospital (693 beds)
- St. Jude Research Hospital (48 beds)

Knoxville
- University of Tennessee Memorial Hospital (524 beds)

Vanderbilt University

Vanderbilt University's School of Medicine is a long established (1875) private school of medicine that emphasizes research and specialty education as well as the comprehensive education of health practitioners. It is located on the main campus of Vanderbilt University in west Nashville.

Schools and Programs:

Medicine	undergraduate students	411
	graduate students	410
	medical sciences	193
Nursing	baccalaureate (342 students) and master's programs	

Division of Allied Health in Hospitals--Programs in speech and hearing, blood bank technology, perfusionists, cytotechnology, medical technology, nuclear medical technology, radiation therapy technology, radiologic technology, respiratory therapy, medical sonography

Hospitals:

Vanderbilt University Hospital (647 beds)
Metropolitan Nashville General Hospital (181 beds)
Veterans Administration Medical Center (475 beds)

TEXAS

Baylor College of Medicine

Baylor College of Medicine (1900) is an independent private institution located in Houston's Texas Medical Center, far from its original parent, Baylor University in Waco. Its objectives include research and training for the specialties as well as comprehensive education for primary care.

Schools and Programs:

Medicine	undergraduate students	671
	graduate students	811
	medical sciences	270

Allied Health--Programs in ophthalmic medical assistant, radiation therapy technology, neurological technology, medical technology, nuclear medicine technology, perfusionist, physician assistant, nurse anesthesia, cardiac rehabilitation

Hospitals:

The Methodist Hospital (1,181 beds)
Harris County Hospital (854 beds)
Texas Childrens' Hospital (288 beds)
Veterans Administration Medical Center (1,007 beds)
St. Luke's Episcopal Hospital (825 beds)

Texas A&M University

The medical school at Texas A&M University is new (1977). The College of Medicine offers the first two years at College Station and the clinical two years at the Temple campus. Its objective is the comprehensive education of practitioners with an emphasis on primary care for rural Texas. Texas A&M University also has a School of Veterinary Medicine.

Schools and Programs:

Medicine	undergraduate students	183
	graduate students	132
	medical sciences	21

Hospitals: Scott and White Memorial Hospital (413 beds)
Veterans Administration Medical Center (561 beds)

Texas Tech University

Texas Tech University Health Sciences Center is a relatively new, but fast growing public health center that serves west Texas. The main campus is located in Lubbock, but the health science center uses three centers in Amarillo, Odessa, and El Paso. The objectives are to provide comprehensive education for practitioners to serve west Texas and, in addition, offer some specialty education and research.

Schools and Programs:

Medicine	undergraduate students	402
	graduate students	301
	medical sciences	48
Nursing	baccalaureate program (181 students)	

Allied Health--Programs in occupational therapy, medical technology, physical therapy, emergency medical technology

Hospitals:

Lubbock General Hospital (297 beds)
Northwest Texas Hospital (Amarillo) (392 beds)
High Plains Baptist Hospital (Amarillo) (304 beds)
Saint Anthony's Hospital (Amarillo) (326 beds)
R. E. Thompson General Hospital (El Paso) (290 beds)
Medical Center Hospital (Odessa) (356 beds)

University of Texas Southwestern Medical Center at Dallas

The University of Texas Southwestern Medical Center at Dallas grew from the Southwestern Medical School (1943). It has become a major research and training institution in the specialties as well as in comprehensive education of health practitioners.

Schools and Programs:

Medicine	undergraduate students	806
	graduate students	744
	medical sciences	306

Allied Health--Programs in medical technology, blood bank technology, physician assistant, physical therapy.

Hospitals:

*Baylor University Medical Center (1,455 beds)
Parkland Memorial Hospital (834 beds)
Veterans Administration Medical Center (652 beds)
Presbyterian Hospital of Dallas (720 beds)
St. Paul Hospital (506 beds)
Children's Medical Center (158 beds)

*Listed as a limited affiliation

University of Texas Medical Branch at Galveston

The medical school at the University of Texas Medical Branch at Galveston began in 1881. It is located on 80 acres on the eastern end of Galveston Island, where it has become a medical center committed to comprehensive education and research and education in the specialties, with many affiliated programs (for example, burn center, poison center, cancer center)

Schools and Programs:

Medicine	undergraduate students	791
	graduate students	377
	medical sciences	174
Nursing	baccalaureate (292 students) and master's programs	

Allied Health--Programs in cytotechnology, medical record administration, medical technology, occupational therapy, physical therapy, physician assistant, respiratory therapy, radiation therapy technology

Medical Humanities (1 student)

Hospitals: University of Texas at Galveston Hospitals (971 beds)

University of Texas Health Science Center at Houston

The University of Texas Health Science Center at Houston was established in 1969 to coordinate several new health professions programs in that city. It has rapidly grown into a major education and research center for the health professions. It is located in the Texas Medical Center in south Houston, where it shares the library and many other resources with Baylor College of Medicine and several other health education programs.

Schools and Programs:

Medicine	undergraduate students	790
	graduate students	408
	medical sciences	63
Dentistry	undergraduate students	419
	graduate students	46
Nursing	baccalaureate (279 students) and master's programs	

Allied Health--Programs in dental hygiene, blood bank technology, cytotechnology, nurse anesthesia, nutrition, and dietetics, radiologic technology, respiratory technology, emergency medical services, histotechnology, medical technical, perfusionist

Public Health

Speech and Hearing Institute

Hospitals:

Hermann Hospital (707 beds)
M. D. Anderson Hospital and Tumor Institute (507 beds)
St. Joseph's Hospital (852 beds)
Memorial Hospital System (1,017 beds)

University of Texas Health Science Center at San Antonio

The University of Texas Health Science Center at San Antonio was organized in 1972 to coordinate the educational activities of several new health education programs in San Antonio. The center is located within the South Texas Medical Center Complex. Its mission includes comprehensive education of health professions and research and education in the specialties.

Schools and Programs:

Medicine	undergraduate students	808
	graduate students	446
	medical sciences	80
Dentistry	undergraduate students	418
	graduate students	33
Nursing	baccalaureate (383 students) and master's (175 students) programs	

Allied Health--Programs in medical technology, blood bank technology, emergency medicine technology, occupational therapy, physical therapy, dental hygiene, and dental laboratory

Hospitals:

Bexar County Hospital District (537 beds)
Veterans Administration Medical Center (674 beds)
Santa Rosa Medical Center (825 beds)

VIRGINIA

Medical College of Hampton Roads (formerly the Eastern Virginia Medical Authority)

The Medical College of Hampton Roads was created in 1964 to provide medical education for the tidewater area of Virginia. It is located in Norfolk. It is a private school with objectives to provide comprehensive education for practitioners and some specialty education and research.

Schools and Programs

Medicine	undergraduate students	294
	graduate students	272
	medical sciences	86

Hospitals:

Childrens' Hospital of King's Daughters (128 beds)
DePaul Hospital (352 beds)
Veterans Administration Medical Center-Hampton (411 beds)
Norfolk General Hospital (644 beds)
Leigh Memorial Hospital (250 beds)

Virginia Commonwealth University

The academic health center of Virginia Commonwealth University was created in 1969 to coordinate the activities of the Medical College of Virginia (established in 1837) and several other health professions education programs in Richmond. A public and urban-oriented center, it is located on its own campus in downtown Richmond. It has a mission of providing comprehensive education in the health professions and research and education in the specialties.

Colleges and Programs:

Medicine	undergraduate students	670
	graduate students	641
	medical sciences	278
Dentistry	undergraduate students	368
	graduate students	35
Nursing	baccalaureate (316 students), master's, and doctoral programs	

Allied Health--Programs in dental hygiene, health administration, medical radiation sciences, medical record administration technology, nurse anesthesia, occupational therapy, physical therapy

Pharmacy — baccalaureate and doctoral programs

Hospitals:
- Medical College of Virginia Hospitals (870 beds)
- Veterans Administration Medical Center (694 beds)

University of Virginia

The Medical Center at the University of Virginia grew from the medical school, which graduated its first students in 1828. It is located on the main campus of the university in Charlottesville It has a mission to provide comprehensive education for practitioners and also to conduct research and education in the specialties.

Schools and Programs:

Medicine	undergraduate students	557
	graduate students	370
	medical sciences	209
Nursing	baccalaureate (304 students), master's and doctoral programs	

Allied Health--Programs in medical technology, nuclear medicine technology, radiation technology, radiologic technology

Hospitals: University of Virginia Hospitals (758 beds)
Roanoke Memorial Hospitals (686 beds)
Veterans Administration Medical Center at Salem (727 beds)

WEST VIRGINIA

Marshall University

The School of Medicine and Associated Health Professions was established at Marshall University, a public university, in 1974. The Center is located adjacent to the main campus in Huntington. It provides comprehensive education with a major emphasis on training practitioners for primary care work.

Schools and Programs:

Medicine	undergraduate students	192
	graduate students	78
	medical sciences	15

Allied Health--Programs in cytotechnology, medical technology, medical laboratory technician

Hospitals:
Cabell Huntington Hospital (298 beds)
St. Mary's Hospital (440 beds)
Veterans Administration Medical Center (180 beds)

West Virginia University

The West Virginia University Medical Center was created in 1960 to coordinate several health professions programs located on the university's main campus in Morgantown. It also includes the Charleston Division and the Wheeling Division of the School of Medicine. The program is oriented to comprehensive education of health practitioners and research and education in the specialties.

Schools and Programs:

Medicine	undergraduate students	346
	graduate students	196
	medical sciences	100
Dentistry	undergraduate students	171
	graduate students	15
Nursing	baccalaureate (428 students) and master's programss	
Pharmacy	baccalaureate program	

Allied Health--Programs in physical therapy, radiology technology, and medical technology

Hospitals: West Virginia Hospitals, Inc. (452 beds)
Charleston Area Medical Center (934 beds)
Ohio Valley Medical Center (479 beds)
Wheeling Hospital (281 beds)